

Claims:

1. A pressure regulating valve for a mechanical returnless fuel system for an automotive vehicle comprising a fuel pump having a pump outlet for supplying fuel from a fuel supply to an engine, said pressure regulating valve comprising:

a conduit having an inlet in fluid communication with the pump outlet and connecting to said fuel supply;

a valve seat disposed within the conduit;

a valve body received in the conduit and comprising a frustoconical seal surface, said valve body being moveable along an axis between a closed position wherein the frustoconical seal surface engages the valve seat and an open position wherein the valve body is spaced apart from the valve seat to permit fuel flow through the conduit; and

a spring for biasing the valve in the closed position.

2. The pressure regulating valve of claim 1 further comprising a valve guide disposed within the conduit and defining a bore, and a valve stem attached to said valve body and received in the bore.

3. The pressure regulating valve of claim 1 wherein the frustoconical seal surface of the valve body extends at a first angle relative to the axis, and said valve seat is frustoconical and extends at a second angle relative to the axis that is distinct from the first angle.

4. The pressure regulating valve of claim 2 wherein the first angle is less than the second angle.

5. A pressure regulating valve for a mechanical returnless fuel system for an automotive vehicle comprising a fuel pump having a pump outlet for supplying fuel from a fuel supply to an engine, said pressure regulating valve comprising:

a housing defining a conduit having an inlet in fluid communication with the pump outlet and an outlet for discharging fuel to said fuel supply;

a valve guide disposed within the conduit,

a valve seat disposed within the conduit and having an inboard edge;

a valve body received in the conduit and comprising a frustoconical seal surface, said valve body being moveable along an axis between a closed position wherein the frustoconical seal surfaces engages the inboard edge of the valve seat and an open position wherein the valve body is spaced apart from the valve seat to permit fuel flow through the conduit;

a valve stem attached to the valve body opposite the frustoconical seal surface and received within the valve guide, and

a spring intermediate the valve body and the valve guide for biasing the valve in the closed position.

6. The pressure regulating valve of claim 5 wherein the valve guide includes an axial bore wherein the valve stem is received, said bore having constricted midsection.

7. The pressure regulating valve of claim 6 wherein the axial bore includes ends that are sized to provide clearance for the valve stem to permit the valve stem in the open position to tilt relative to the axis.

8. The pressure regulating valve of claim 6 wherein the inlet is coupled to a fuel line connecting the fuel pump to the engine.

9. The pressure regulating valve of claim 6 wherein the pressure regulating valve is incorporated within the fuel pump.

10. A mechanical returnless fuel system for an automotive vehicle for supplying fuel from a fuel supply to an engine, said mechanical returnless fuel system comprising:

a fuel pump having a pump outlet;

a fuel line connecting the pump outlet to the engine; and

a pressure regulating valve comprising:

a conduit having an inlet in fluid communication with the pump outlet and connecting to said fuel supply;

a valve seat disposed within the conduit;

a valve body received in the conduit and comprising a frustoconical seal surface, said valve body being moveable along an axis between a closed position wherein the frustoconical seal surface engages the valve seat and an open position wherein the valve body is spaced apart from the valve seat to permit fuel flow through the conduit; and

a spring for biasing the valve in the closed position.

11. The mechanical returnless fuel system of claim 10 further comprising a valve guide disposed within the conduit and defining a bore, and a valve stem attached to said valve body and received in the bore.

12. The mechanical returnless fuel system of claim 10 wherein the frustoconical seal surface of the valve body extends at a first angle relative to the axis, and said valve seat is frustoconical and extends at a second angle relative to the axis that is distinct from the first angle.
13. The mechanical returnless fuel system of claim 12 wherein the first angle is less than the second angle.
14. The mechanical returnless fuel system of claim 10 wherein the bore has constricted midsection.
15. The mechanical returnless fuel system of claim 14 wherein the axial bore includes ends that are sized to provide clearance for the valve stem to permit the valve stem in the open position to tilt relative to the axis.